

## 19. From art to astrophysics: how art inspires science communication. A show for planetariums to convey astronomical concepts throughout images, dialogue and art exhibition

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### Premise: “earth” without “art” is just “eh”

The process which gives life to artworks because painters are inspired by the charm of the Sky is a well-known process. The beauty and mystery of Cosmos have always given mankind, and still give, a lot of masterpieces, from the Halley comet painted by Giotto in the Scrovegni Chapel to the Starry Nights by Vincent Van Gogh. But, what about the opposite process? How could art inspire science?

The Internet meme “earth” without “art” is just “eh” sounds very suitable for this project, which collects several input from different experts and expertises:

Alessandro Rinaldi (<http://www.alessandrorinaldi.net>) is an Italian artist present at the 54th Biennale International Art Exhibition of Venice. He has painted cosmic scenes, such as starry skies, constellations and moons which are specifically used for this project. He is also the father of the idea because it was he who asked the astrophysicist for the possibility to arrange an exhibition inside an astronomical observatory or a planetarium.

Giuliana Rubbia, a physicist working at the National Institute for Geophysics and Volcanology of Italy (<http://www.ingv.it>), has a long amateur theatre experience and a strong interest in the use of scientific content in plays.

Angela Misiano manages the Planetarium Pythagoras in Reggio Calabria (<http://www.planetariumpythagoras.com/>) where she organises throughout the year educational and entertaining shows about astronomy and the night sky.

Caterina Boccato, National Institute for Astrophysics of Italy (<http://www.inaf.it>), has the task of identifying and explaining in correct and simple manner the scientific concepts to be conveyed through this particular performance.

### The rationale

For this project we referred to previous works and research. We combined an important work about Aesthetics and Astronomy, done by a group of experts in education and Astrophysics outreach with old studies about relations between Science and Art starting from the work of J. Arthur Thomson.



The first work about aesthetic and astronomy was conceived at the College of Education, by Jeff Smith who is co-director of the Educational Assessment Research Unit and his wife Lisa. One of their current projects is to identify how best to encourage people's appetite for information about space. They joined a group of scientists at the NASA-affiliated Harvard-Smithsonian Centre for Astrophysics to study the interplay between education, aesthetics and astronomy.

The Smiths knew that most people found images of space beautiful, but wondered how well they managed to communicate a scientific message. They discovered that reactions to art and to images of space are similar. The lay public may not have much specific knowledge, but is sufficiently attracted by the wonder of impressive works to want to find out more. One of the obvious conclusions of this work is that you don't need to be an artist to appreciate art and you don't need to be a scientist to appreciate science. What you do need is clear communication that helps in explaining what you are looking at and chances to have your questions easily and simply answered.

We combined these considerations with psychological ones. J. Arthur Thomson, in his book "Introduction to science", explained how there are three relations between Science and Art: (1) there is a scientific study of aesthetics; (2) Science has enormous stores of what may be called the raw materials of Art; and (3) there is an interesting psychological opposition between the two moods.



Aesthetics is a psychological science which inquires into the characteristics of that familiar experience which we call "enjoying Nature or Art", and of the rarer experience of productive artists.

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Human beings' emotional relation to Nature is primal and fundamental. The fundamental and ancient impressions are of the world-power, of the immensities, of the pervading order, and of the universal flux. To these modern science has added impressions of manifoldness, intricacy, inter-relatedness, and evolution. Nature is more than a mirror of our moods; the fundamental impressions are impersonal. While they have scientific validity, they are hardly less important in supplying the raw materials of poetry. Yet there is undoubted opposition between the scientific and the artistic mood; when either is in the saddle it must keep the other at a spear's length.

### **The performance: a dialogue between Science and Art**

The final product of this project will be a drama performed in a particular theatre, built primarily for educational and entertaining shows about astronomy and the night sky: a planetarium. The public will be involved in an immersive show of artistic and astronomical images, and will listen to the two characters, Mr. A and Lady S, discussing both artistic and scientific aspects of each painting: from the raw material used for inspiring a painting to the scientific knowledge of the celestial objects represented in the painting.

The dialogue will be performed in a very classical way, using slides with alternating paintings and astronomical images according to what the two characters say at that moment. The story will be very simple. Starting from the painting in Fig. 1 for example, Science will ask Art "What is this, what does this painting represent?" and Art will explain its view, dream, vision but also the knowledge from which the painter took inspiration, giving Science the opportunity to introduce some scientific concepts.

The dialogue between Mrs. Science and Mr. Art will play on the duality of Art and Science but with a psychological game about Male and Female moods. This is done in order to stress more the interchange between these two moods, skills, and visions of the world. The dialogue will be also conducted very softly: both Science and Art have full respect for each other, they don't want to have the truth in their hands, in order to obey a fundamental process that you have to use if you want to convey some scientific message to your public: you have first to understand what model of reality your interlocutor has in his/her mind, then you have to demonstrate to him/her that he/she has some misconceptions in his/her mind and only after that you can explain the correct concept. Sometimes, the public can have the right idea in mind but maybe not complete or confused with something else...



*Figure 1 – A painting for the dialogue between Mrs. Science and Mr. Art, courtesy of Alessandro Rinaldi. The public will have the opportunity of seeing real artworks in an exhibit inside the planetarium.*

### **Future perspectives**

The proposed format could be regarded as a new one for science outreach, where Astronomy could be replaced with Natural and Environmental Sciences, while dialogues around scientific issues could be performed inside planetariums as well as on other stages.